

Claims

1. A method of measuring a biological surface which comprises the steps of:
irradiating a white light to the biological surface as a sample;
detecting a spectrum of the white light reflected from two or more positions on said biological surface;
plotting an absorbance of said spectrum to a spectral multi-dimensional space of light;
conducting a multivariate analysis of a data on said spectral multi-dimensional space obtained from said two or more positions to obtain eigenvectors of at least first, second and third principal components;
projecting the data of each position onto a direction of each eigenvector to display a magnitude thereof on a gray scale or in colors according to the magnitude, on a two-dimensional screen.
2. The method of measuring a biological surface according to claim 1, wherein said multivariate analysis is conducted with said spectrum of light having wavelength bands of from 500 to 600nm, and 500 to 850nm.
3. The method of measuring a biological surface according to claim 1, wherein said multivariate analysis is conducted with said spectrum of light having wavelength bands of from 500 to 600nm, and 700 to 780nm.
4. The method of measuring a biological surface according to claim 1, wherein said multivariate analysis is conducted with said spectrum of light having wavelength bands of from 500 to 600nm, 500 to 850nm and 700 to 780nm.
5. A method of measuring a biological surface which comprises the steps of:
conducting a multivariate analysis with a wavelength band including an absorption wavelength band specific to melanin; and
predicting a melanin concentration from a score of an eigenvector corresponding to melanin and a calibration curve of a score obtained from a sample whose melanin concentration is known.
6. The method of measuring a biological surface according to claim 1, wherein a light-sensitive substance is administered to said biological surface so that said multivariate analysis is conducted with said spectrum of light having basic wavelength bands of from 500 to 600nm, 500 to 850nm and 700 to 780nm, further including a wavelength band specific to said light-sensitive substance.
7. The method of measuring a biological surface according to claim 1, wherein talaporfin is administered to said biological surface so that said multivariate analysis is conducted with said spectrum of light having a basic wavelength band of from 600 to 700nm.
8. The method of measuring a biological surface according to claim 1, wherein said multivariate analysis is conducted with said spectrum of light having a basic wavelength band of 700nm or above.

9. The method and apparatus for measuring a biological surface according to claim 1, wherein said multivariate analysis is conducted with said spectrum of light having basic wavelength bands of from 500 to 600nm and 500 to 850nm, while a data of at least one position on said biological surface is projected onto the direction of each eigenvector to display a change of magnitude thereof with time.

10. An apparatus for measuring a biological surface comprising:
a means for irradiating a white light to the biological surface as a sample;
a means for detecting a spectrum of the white light reflected from two or more positions on said biological surface;
a means for plotting an absorbance of said spectrum to a spectral multi-dimensional space of light;
a means for obtaining eigenvectors of at least first, second and third principal components by conducting a multivariate analysis of data on said spectral multi-dimensional space obtained from said two or more positions; and
a means for displaying a magnitude thereof on a gray scale or in colors according to the magnitude, on a two-dimensional screen by projecting the data of each position onto a direction of each eigenvector.

11. The apparatus for measuring a biological surface according to claim 8, wherein said means for irradiating a white light is provided integrally with a means for condensing reflection from two or more positions on said biological surface sample by combining them with an optical fiber.